The Impact of Government Intervention in Mitigating the Shadow Economy: Special Reference to Colombo District, Sri Lanka

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ABSTRACT

The shadow economy operates outside official channels, making it challenging for the government to accurately measure its true size and impact. This study explores the impact of government interventions on mitigating the activities in the shadow economy of the Colombo district in Sri Lanka. Our research employed an opinion survey to gather data from 150 respondents representing public, semi-government, and private employees in the Colombo district. The results revealed that government intervention significantly influences the reduction of shadow economic activities in the Colombo district. The respondents have a strong belief that prevailing regulations and economic incentives have a significant impact on reducing the size of shadow economic activities, while their confidence in tax policies and enforcement measures is lower and insignificant. Our findings can serve as a reference point for policymakers when assessing the effectiveness of current laws and adjusting their tactics to better suit the changing nature of shadow economic activity in the Colombo district.

Keywords: Colombo district, government intervention, shadow economy, perception survey.

JEL Classification: E 26, G18, H26, O17

1. Introduction

The shadow economy, also known as the underground economy, includes a wide range of economic activities that operate outside the scope of government regulations and taxation (Giedraitis et al., 2023). It is an alternative economic system that exists alongside the formal economy. These activities are often unreported, untaxed, and unregulated, creating a complex and elusive domain that presents challenges for governments, policymakers, and researchers.

Governments worldwide are increasingly concerned about the negative consequences associated with the shadow economy. One significant concern is the impact on tax revenues. The existence of a substantial shadow economy can lead to significant revenue losses for governments, as economic transactions occurring within this sphere are not subject to taxation, which can strain public finances, hinder the provision of public goods and services, and undermine efforts to reduce budget deficits (OECD, 2017). Moreover, the shadow economy can distort competition within the formal sector, creating market imbalances, hindering legitimate businesses, and eroding trust in formal economic institutions. The shadow economy can have adverse effects on social welfare programs as individuals or businesses operating in the informal sector may not contribute to social security systems or other forms of social protection, which can strain the sustainability of social welfare programs and exacerbate inequalities within society (Anthesis, 2024).

Given these concerns, governments have been implementing various measures to address the shadow economy and mitigate its negative impacts, including tax reforms, regulatory changes, initiatives to improve tax compliance, public awareness campaigns, and law enforcement actions (OECD, 2017). However, the effectiveness of such interventions in reducing the size and scope of the shadow economy varies and depends on a range of factors, including the socio-economic context, institutional capacity, and enforcement capabilities (Samaranayake & Dayaratna-Banda, 2015). Understanding the complexities surrounding the shadow economy and its relationship with government intervention is essential for policymakers and stakeholders seeking to develop effective strategies to combat its negative consequences. Through rigorous research and analysis, this study aims to contribute to the existing knowledge base by exploring the impact of government intervention on the shadow economy, examining the strategies employed by governments, assessing their effectiveness, and identifying potential unintended consequences (Guven et al., 2021).

There is an ongoing debate regarding the most effective strategies for government intervention, while the shadow economy presents numerous challenges. Despite the valuable insights provided by previous research, there is a dire need for research on the shadow economy to address empirical gaps. There is a need for more comparative studies that examine the

effectiveness of different government intervention strategies across countries and regions to identify best practices and contextual factors that influence the success of interventions. There is also a lack of research on the unintended consequences of government intervention, such as potential displacement effects or unintended shifts towards other illicit activities, requiring further investigation to understand the broader systemic implications of intervention measures. Thus, our study conducted the first empirical survey in Sri Lanka to investigate the impact of government intervention on mitigating the size of the shadow economy in the Colombo district.

2. Literature review

Shadow economy activities include cash-in-hand transactions, undeclared work, informal employment arrangements, and illicit activities such as smuggling or counterfeiting (Williams, 2023). Studies have estimated the size of the Sri Lankan shadow economy as a percentage of Gross Domestic Production using structural equation models (Samaranayake & Dayaratna-Banda, 2015; Samaranayake, 2017; Kannangara & Wu, 2023). The size and extent of the shadow economy vary significantly across countries and regions due to the complex interplay of socio-economic factors, cultural norms, and government policies (Alfoul et al., 2022), also known as a necessary evil for developing nations (Samaranayake, 2016). Factors such as high tax burdens, excessive regulations, bureaucratic hurdles, and corruption can contribute to the growth of the shadow economy (Nemec et al., 2021). Additionally, social attitudes toward informal employment, cultural traditions, and historical contexts also play a role in shaping the prevalence and acceptance of shadow economic activities (Schneider & Enste, 2002).

Understanding the shadow economy can be challenging due to its complex and multifaceted nature. It encompasses a wide range of economic activities, including off-the-books transactions, unreported employment, informal work arrangements, and illicit practices (Schneider & Enste, 2003). Consequently, different definitions have emerged based on various perspectives and research objectives. Some definitions emphasize the illegal aspects of the shadow economy, focusing on activities like tax evasion, smuggling, and counterfeiting. Others take a broader view, encompassing both legal and illegal activities conducted outside the formal regulatory framework (Neck et al., 2012).

Measuring the size of the shadow economy is also a complex task due to its secretive nature. Various approaches and estimation techniques have been developed to gauge its scale (Schneider & Buehn, 2017). These measurement methods can be broadly categorized into direct and indirect approaches. Direct approaches involve collecting data through surveys, interviews, or administrative records specifically designed to capture shadow economic activities (Schneider &

Buehn, 2017; Samaranayake & Dayaratna-Banda, 2015). On the other hand, indirect approaches use statistical and econometric methods to estimate the size of the shadow economy based on other economic indicators, such as discrepancies between national income and expenditure data, currency demand, or labor market informality rates (Medina, 2018).

Different conceptualizations and measurement methods result in a wide range of estimates for the size of the shadow economy across countries and regions (Berdiev et al., 2023). The estimates can vary significantly, influenced by factors such as the socio-economic context, cultural norms, and the effectiveness of government regulations and enforcement (Gerxhani & Cichocki, 2023). Despite these challenges, estimating the size of the shadow economy is crucial for policymakers, as it provides insights into economic dynamics, tax gaps, and potential policy interventions required to address this informal economic sector (Kenton & Mansa, 2022).

2.1. Factors driving the shadow economy

Socio-economic factors play a significant role in driving the growth of the shadow economy (Gerxhani & Cichocki, 2023). High levels of poverty, unemployment, and income inequality create economic hardships and push individuals to seek alternative means of income generation (OECD, 2017). The lack of formal employment opportunities and the inability of individuals to meet their basic needs within the formal economy can drive them towards the informal sector (Amzuica & Mititelu, 2023). Furthermore, socioeconomic disparities and limited access to financial services can hinder individuals' participation in the formal economy, leading them to rely on informal economic activities to sustain their livelihoods.

Institutional factors also shape the growth and persistence of the shadow economy. Complex and burdensome regulatory frameworks, excessive bureaucratic procedures, and high tax burdens can create barriers and disincentives for individuals and businesses to operate within the formal sector. Inadequate access to legal protections, limited property rights, and corruption within formal institutions can further undermine trust and confidence in the formal economy, driving economic actors towards the shadow economy (OECD, 2017). Moreover, weak enforcement of regulations and inadequate penalties for non-compliance can diminish the perceived risks associated with engaging in informal economic activities, further fueling their growth (Schneider, 2012).

Cultural factors and societal norms also influence the prevalence of the shadow economy. Cultural acceptance and norms surrounding informal economic activities can vary across different societies and communities (Gerxhani & Cichocki, 2023). In some contexts, informal practices may

be deeply ingrained within the social fabric, viewed as survival strategies or traditional economic activities. These cultural norms can perpetuate and sustain the shadow economy by providing a supportive environment and social legitimacy for informal economic practices (Polese et al., 2023). Furthermore, social networks and community ties can play a crucial role in facilitating the growth of the shadow economy, as they provide information, resources, and support networks for individuals and businesses engaged in informal activities.

2.2. Government intervention strategies

Tax reforms are a common strategy used by governments to address the shadow economy (Wahua et al., 2023). These reforms aim to reduce tax burdens, simplify tax systems, and enhance compliance mechanisms. Governments seek to incentivize individuals and businesses to operate within the formal economy by implementing fair and transparent tax policies (Wahua et al., 2023). Tax incentives, such as reduced tax rates or exemptions for specific industries or activities, can also be used to encourage formalization and discourage shadow economic practices (Kelmanson et al., 2019).

Regulatory frameworks play a crucial role in combating the shadow economy. Governments can implement regulations that promote ease of doing business, reduce administrative burdens, and enhance transparency. By simplifying bureaucratic procedures, lowering entry barriers, and streamlining business registration processes, governments can create an environment conducive to formal economic activities (Mara et al., 2023). Furthermore, robust regulatory frameworks can help ensure fair competition, protect workers' rights, and provide a level playing field for businesses, discouraging engagement in informal practices.

Public awareness campaigns are an essential tool for combating the shadow economy. Governments can launch educational initiatives to inform the public about the negative consequences of participating in the shadow economy (OECD, 2017). These campaigns aim to raise awareness about the benefits of formalization, such as access to social protection, legal rights, and business opportunities. By educating individuals and businesses about the advantages of operating within the formal sector, governments seek to shift social norms, attitudes, and behaviors toward formal economic participation (Zibell & Madhur, 2010).

Law enforcement actions are another critical component of government strategies to combat the shadow economy. Governments can strengthen their enforcement efforts by allocating resources to investigate and prosecute individuals and businesses engaged in illegal activities. This includes cracking down on tax evasion, smuggling, counterfeiting, and other illicit practices associated with the shadow economy (Mathias & Wardzynski, 2023). Effective law enforcement

can act as a deterrent, sending a strong signal that non-compliance will not be tolerated and encouraging individuals and businesses to operate within the bounds of formal regulations (Lukito & Adi, 2023). It is important to note that the effectiveness of these strategies may vary depending on the specific context and circumstances of each country. Cultural norms, social attitudes, institutional capacity, and the socio-economic environment can all influence the success of these interventions. Therefore, a comprehensive approach that combines multiple strategies, tailored to the specific context, is often necessary to address the complexity of the shadow economy (U.S. Department of Justice, 2022).

2.3. Research retrieval on the impact of government intervention

Previous research has provided valuable insights into the impact of government intervention on the shadow economy. Various strategies employed by governments, such as tax reforms, regulatory measures, public awareness campaigns, and law enforcement actions, have been studied to understand their effectiveness in addressing this pervasive economic phenomenon (Lukito & Adi, 2023; Mathias & Wardzynski, 2023; Zhanabekov, 2022). One key finding is that the effectiveness of these interventions can vary depending on contextual factors such as socioeconomic conditions, cultural norms, and institutional capacities (Gerxhani & Cichocki, 2023). For example, tax reforms and regulatory measures may lead to different outcomes in different contexts based on factors such as enforcement mechanisms, levels of corruption, and administrative efficiency.

Additionally, public awareness campaigns have been highlighted as important in shaping attitudes and behaviors related to the shadow economy (Akitoby, 2018). Effective campaigns can contribute to a shift in social norms and reduce incentives for engagement in informal practices, but their design and implementation must be tailored to specific cultural contexts and target audience characteristics to maximize their impact (OECD, 2017).

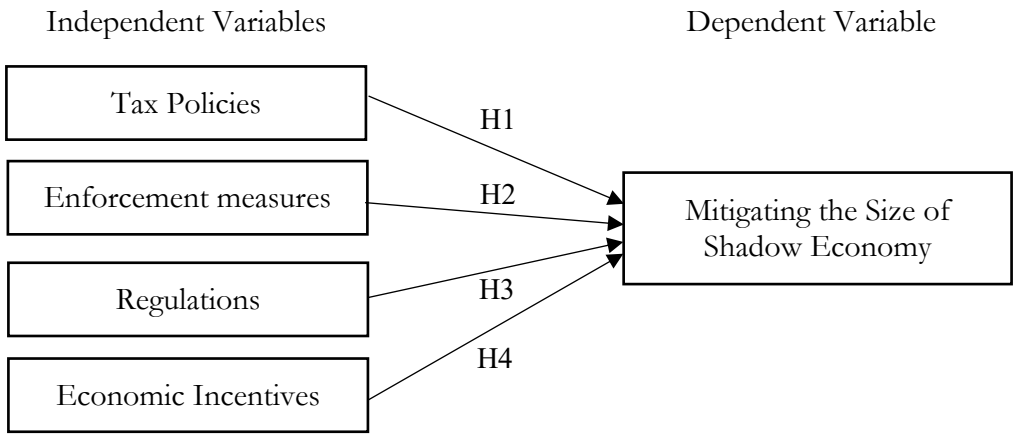
Law enforcement actions also play a significant role in deterring illicit activities associated with the shadow economy. Strong enforcement measures and effective penalties can discourage tax evasion, smuggling, and other illegal practices (Wiseman, 2024). However, a balanced approach is essential to ensure that enforcement efforts do not excessively burden legitimate economic activities or infringe upon individual rights (Climate Adapt, 2016). The increasing use of digital platforms and alternative payment systems may have both positive and negative implications for government interventions. Understanding the impact of digitalization on the shadow economy and exploring innovative approaches to tackle informal economic activities in the digital realm are areas that warrant further investigation (Peabody et al., 2006).

3. Methodology

The research methodology utilized in this study employed a quantitative research approach based on the positivist research philosophy, adopting a deductive approach. The study identified independent variables such as tax policies, enforcement measures, regulations, and economic incentives, with the reduction of economy size as the dependent variable. These variables formed the basis of the study's hypothesis. Data collection involved administering a survey questionnaire to 150 respondents, including public, semi-government, and private sector employees in the Colombo district. Random sampling was employed to ensure inclusivity and representativeness. The questionnaire covered various contents, including professionals' attitudes, demographic characteristics, and perceptions of government interventions. Quantitative data collected through the survey questionnaire will be analyzed using SPSS 23 software, facilitating various statistical tests such as descriptive statistics, correlation analysis, multicollinearity tests, and multiple regression analysis. Throughout the research process, ethical considerations were prioritized to uphold integrity, confidentiality, and respect for participants' rights. This methodology provides a strong framework for generating accurate and reliable results to inform evidence-based policy and decision-making processes in addressing issues related to the shadow economy in Sri Lanka.

3.1. Conceptual framework, hypotheses and the analytical strategy

In our comprehensive literature review, we identified four independent variables for the current study: perceptions of tax policies, enforcement measures, regulations, and economic incentives. The dependent variable is the perception of a reduction in the size of the shadow economy. We aim to analyze the impact of government interventions on mitigating activities in the shadow economy using these variables. We have introduced the conceptual framework in Figure 1 to illustrate these relationships.



Source: Authors' preparation

The following hypotheses are developed based on the conceptual framework shown in Figure 1 and by consulting prior literature on the topic.

H1: Tax policies have a significant impact in mitigating the size of the shadow economy of the Colombo region.

H2: Enforcement measures have a significant impact in mitigating the size of the shadow economy of the Colombo region.

H3: Regulations have a significant impact in mitigating the size of the shadow economy of the Colombo region.

H4: Economic incentives have a significant impact in mitigating the size of the shadow economy of the Colombo region.

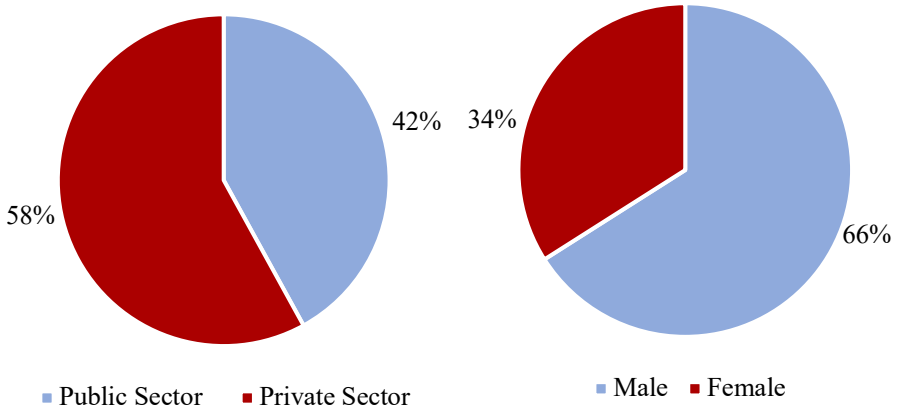
hypothesized impact of each independent variable on the dependent variable, the perception of the reduction in the size of the shadow economy (RES).

$$RES_i = \beta_0 + \beta_1 TP_i + \beta_2 EM_i + \beta_3 REG_i + \beta_4 EI_i + \varepsilon_i \quad (1)$$

We estimate the linear effect of the average of perceptions on Tax Policies (TP), Enforcement Measurements (EM), Government Regulations (GR), and Economic Incentives (EI) on RES. In addition to that, we used descriptive statistics of key demographics, correlation analysis, and graphical illustrations whenever applicable to improve the details of our analysis.

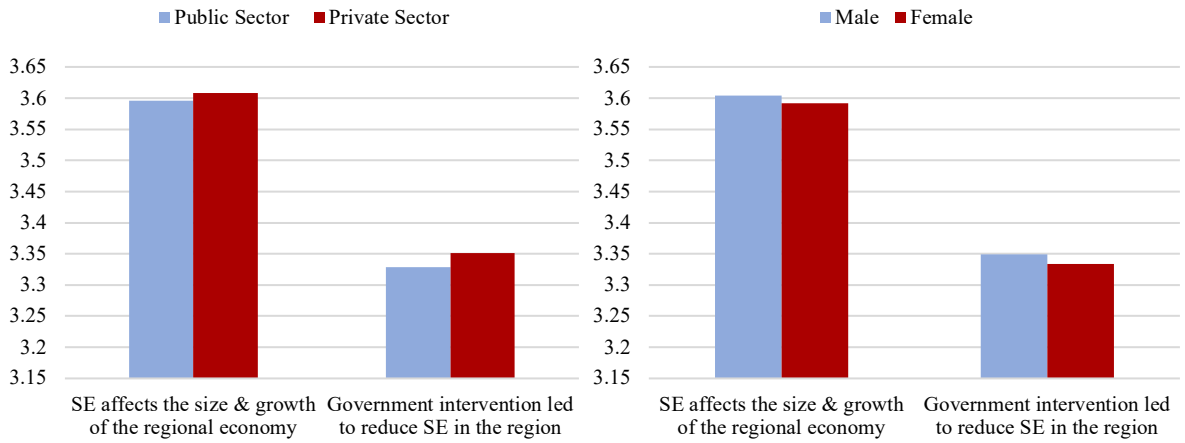
4. Results and discussion

We deployed our measures based on perceptions of employees who serve for private, and public organizations. The majority of the sample consisted of private sector employees, which is 58 percent. The rest of 42 percent are from public organizations. Further, the gender composition of our sample is dominated by males as 66 percent of the respondents are males, and 34 percent are females out of 150.



Figures 2 & 3: Employee's working sector & gender composition
(Source: Authors' preparation)

Figures 4 and 5 below demonstrate the comparison between the respondents' key demographics and their average perceptions on 'the impact of shadow economy to the regional economy' and our dependent variable, 'the impact of government intervention to the reduction in the size of shadow economy'. This highlights how the heterogeneity in the profession and gender of the respondents affects their beliefs about the shadow economy.



Figures 4 & 5: Employee's perceptions on the shadow economy
Source: Authors' preparation

Figure 4 shows how the perceptions of employees on the shadow economy vary based on the type of their profession. The average perceptions of both the private and private sector employees about the significance of the shadow economy in affecting the size and growth of the regional economy vary around 3.6 out of the 5-point Likert scale. This means both the private and public sector employees have a moral agreement through the beliefs they have developed on the prevalence and significance of shadow economic activities in the Colombo district. Further, the respondents representing both sectors moderately agreed that the government intervention has a significant effect in reducing the shadow economy. The average of perceptions is not significantly different between sectors, yet stay below the confidence they had when they have beliefs on the adverse effect of the shadow economy in the regional economy. The gender-based comparison also demonstrated the same patterns as in Figure 5 and no clear difference between the perceptions of males and females.

Table 1 presents the central tendencies of the study's main variables including their mean values, standard deviations, minimum, and maximum values. The dependent variable "the impact of government intervention to the reduction in the size of shadow economy", will say 'SE size reduction' hereafter was evaluated by 5-point Likert scale questions.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
SE Size Reduction	150	1	5	3.46	.783
Tax Policies	150	1	5	3.39	.825
Enforcement measures	150	1	5	3.24	.842
Regulations	150	1	5	3.41	.881
Economic Incentives	150	1	5	3.29	.837
Valid N (listwise)	150				

Source: Authors' estimations using SPSS statistical software

The mean value of this variable is 3.46, suggesting that respondents' opinions about the shadow economy size are commonly more in line with the middle of the scale (3.46 is close to 3 value), which denotes a rather neutral view. This could be a sign of the respondents' varied mindsets, with some expressing a stronger belief that the government is intervening in the decreasing activities in the shadow economy and others displaying a vice versa. Through a set of five Likert scale questions, all four independent variables also vary between 3.2 and 3.4 and the average measures of perceptions are more towards neutral opinions.

However, the large sum of squares (1921.270) and mean square (12.894) for "Between People" as in Table 2 indicate that there are substantial differences in responses between different participants. The variance within people, the sum of squares (98.284), mean square (4.095), and significant F-value (7.349, $p<.000$) indicate there is a significant variation between the different responses. The ANOVA results show significant variability both between individuals and their responses, indicating that the perceptions of government intervention's effectiveness in mitigating the shadow economy vary widely.

Table 2: Analysis of Variance & the Reliability

		Sum of Squares	df	Mean Square	F	Sig
Between People		1921.270	149	12.894		
Within People	Between Items	98.284	24	4.095	7.349	.000

	Residual	1992.756	3576	.557
Total		2091.040	3600	.581
Cronbach's Alpha = 0.957			N of Items: 25	

Source: Authors' estimations using SPSS statistical software

We used the ANOVA table and reliability statistics to assess the data set's reliability. It is determined by Cronbach's alpha and the significance value in the ANOVA table, as shown below. It should be stated that the data set is more reliable when the Cronbach alpha value is more than or equal to 0.7 and the significance value is $P<0.05$. According to the following table, Cronbach's alpha is 0.957 which is higher than 0.7, as well as the significance value (0.000) is less than 0.05. it means that the internal consistency of the data collection is much stronger, and also the research instrument can be trusted and will produce accurate outcomes.

To test the normality of the data set, we used the skewness and kurtosis valuesas shown in table 3 below. The general criteria for accepting the normality of the data set are skewness value for each variable should be less than 1 and the kurtosis value should be within the range of +2 and -2. According to the table below, the skewness statistic forall the variables is less than 1, and the kurtosis statistic for all the variables relied upon the range of +2 and -2. Hence, our data set follows the normality assumption.

Table 3: Skewness and Kurtosis statistics

	N	Skewness	Kurtosis
	Statistic	Statistic	Statistic
SE Size reduction	150	-.781	1.023
Tax Policies	150	-.563	-.039
Enforcement measures	150	-.522	.218
Regulations	150	-.812	.424
Economic Incentives	150	-.317	.128
Valid N (listwise)	150		

Source: Authors' estimations using SPSS statistical software

Then the test for linearity between the dependent and independent variables is tested as in Table 4, and the significance value of deviation from linearityfor the dependent variable and

each independent variable is 0.054, 0.063, 0.125, and 0.05,respectively. All these values are more than 0.05, indicating that we have enough evidence to accept the null hypothesis which means there is a linear relationship between the dependent and independent variables.

Table 4: Significance values of deviation from linearity

	Sig. value of deviation from linearity
SE size reduction*Tax policies	0.054
SE size reduction *Enforcement measures	0.063
SE size reduction*Regulations	0.125
SE size reduction*Economic incentives	0.05

Source: Authors' estimations using SPSS statistical software

Then we have estimated the regression model and its overall significance is shown in Annexure I and Annexure II. Overall, the results show that the model is significant F (4,145) = 69.859, p<0.001, R2=.0.658. The R-squared value of 0.658 indicates that approximately 65.8 percent of the reduction in the activities of the shadow economy could be defined by the combined effects that come from the independent variables. Then the causal effects of each independent variable on the dependent variable, 'SE size reduction' is given in table 5 below.

Table 5: Causal effects

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.712	.178		3.993	.000
	Tax Policies	.043	.077	.045	.555	.580
	Enforcement measures	.056	.068	.060	.822	.412
	Regulations	.350	.080	.394	4.379	.000
	Economic Incentives	374	.066	.399	5.665	.000

a. Dependent Variable: Economy Size Reduction

Source: Authors' estimations using SPSS statistical software

Out of four independent variables that represent different modes of government intervention, Tax policies and Enforcement measures do not have a significantimpact on SE size reduction since their respective t-values (0.555 and 0.822) are lessthan 2 and their corresponding p-

values (0.580 and 0.412) are more than 0.05. However, Regulations and Economic incentives have a significant impact on Shadow economy sizebecause their respective t-values (4.379 and 5.665) are greater than 2, and p-values (0.000 for both variables) are less than 0.01. Therefore, regulations and economic incentives have a significant influence on the mitigation of magnitudes in the shadow economy based on the t-values and p-values in the regression model. We can write the estimated regression model based on the coefficients and their significance as follows,

$$RSE = 0.712 + 0.043TP + 0.056EM + 0.35REG + 0.374EI \quad (2)$$
$$(0.178)^{***} \quad (0.77) \quad (0.68) \quad (0.80)^{***} \quad (0.66)^{***}$$

According to the results of the unstandardized coefficient beta values, regulations and economic incentives have a large significant impact on reducing the size of the shadow economy through government intervention since their beta values are 0.350 and 0.374. a complete (100 percent) improvement in respondents' beliefs on the effectiveness of government regulations and economic incentives will lead to a reduction in the prevalence of shadow economic activities by 35 and 37 percent. Further, the regression outcomes led us to observe a lack of evidence to reject the null hypothesis which states that tax policies do not have a significant impact on the mitigation of activities in the Sri Lankan shadow economy and also that enforcement measures do not have a significant impact on the mitigation of activities. We have enough evidence to reject the null hypothesis which states that regulations do not have a significant impact on the mitigation of activities in the Sri Lankan shadow economy since the t-value is 4.379 which is greater than 2 and p- the value of 0.000 is less than 0.05. Also, we reject the null hypothesis which states that economic incentives do not have a significant impact on the mitigation of activities in the Sri Lankan shadow economy since the t-value is 5.665 which is greater than 2 and p- the value of 0.000 is less than 0.05.

Table 6: Summary results of regression analysis

Hypothesis	t-values	p-values	Conclusion	Decision
H1	0.555	0.580	t-value is less than 2 and the p-value is more than 0.05	Do not reject the null hypothesis
H2	0.822	0.412	t-value is less than 2 and the p-value is more than 0.05	Do not reject the null hypothesis
H3	4.379	0.000	t-value is more than 2 and the p-value is less than 0.05	Reject the null hypothesis
H4	5.665	0.000	t-value is more than 2 and the p-value is less than 0.05	Reject the null hypothesis

Source: Authors' preparation

6. Conclusion and contribution to the prior research

In our research, we undertook the first empirical survey in Sri Lanka with the aim of exploring the impact of government intervention on reducing the size of the shadow economy in the Colombo district. The study involved gathering data from 150 professionals working in both the public and private sectors in and around the Colombo district. We used independent variables such as tax policies, enforcement measures, regulations, and economic incentives to represent government intervention, while the beliefs of the respondents regarding government intervention were used as a measure of mitigating activities in the shadow economy.

Initially, we employed graphical analysis to investigate whether the profession and gender diversity of the respondents influenced their beliefs about the shadow economy. Interestingly, we did not find a clear effect from diversity in these key demographics, as both private and public sector employees across both genders held similar beliefs about the impact of the shadow economy on the regional economy, as well as the importance of government intervention to mitigate its size.

Our regression analysis results indicated that government intervention significantly influences the reduction of shadow economic activities in the Colombo district. Specifically, respondents strongly believed that prevailing regulations and economic incentives have a substantial impact on reducing the size of shadow economic activities, while their confidence in tax policies and enforcement measures was lower and statistically insignificant. These findings were further supported by the work of Zhanabekov (2022), which also demonstrated the positive influence of government intervention strategies on reducing activities in the shadow economy. However, we found that tax policies and enforcement measures did not have a significant impact on economic size reduction, as the t-values and p-values of those variables did not meet standard criteria. These results align with the findings of prior studies (Zhanabekov, 2022; Kelmanson et al., 2019), suggesting that tax policies and government measures do not significantly mitigate activities in the shadow economy.

In contrast, the work of Schneider (2012) revealed that tax policies have a significant impact on reducing activities in the shadow economy. Furthermore, our regression analysis suggested that regulations and economic incentives have a significant impact on mitigating the size of the shadow economy. These results were further supported by Schneider (2012), which indicated that government regulations have a significant impact on reducing activities in the

shadow economy. However, some researchers (Akitoby, 2018) have pointed out that regulations have a conclusive impact, while enforcement measures do not have any significant impact on mitigating activities in the shadow economy.

Our findings can be valuable for policymakers when evaluating the effectiveness of current laws and adjusting their strategies to better address the evolving nature of shadow economic activity in the Colombo district. It's important to note that our study's focus on specific variables related to government intervention might exclude important factors such as cultural norms and technological advancements. We believe there are numerous opportunities for further research, including expanding the scope and sample size, as well as incorporating diverse populations to enhance generalizability and conduct comparative research across different regions. Additionally, longitudinal surveys would be more effective in observing the evolution of the shadow economy and the long-term effects of government policies.

Conflict of interest:

Authors declare no conflict of interest and all three co-authors have participated in the research/ work of this article.

7. References

Alfoul, A. M. N., Khatatbeh, I. N., & Jamaani, F. (2022). What Determines the Shadow Economy? An Extreme Bounds Analysis. *Sustainability*, 14(10), 5761.

Akitoby, B. (2018). Raising revenue. Finance and Development, 55(1), 18-21. https://www.imf.org/en/Publications/fandd/issues/2018/03/akitoby.

Alm, J., Bloomquist, K. M., & McKee, M. (2019). Experimental evidence on tax evasion and the shadow economy. *Journal of Economic Behavior & Organization*, 157, 785-803.

Amzuica, B. F., & Mititelu, R. A. (2023). The underground economy: an exploration of components, size, causes and effects. Technium Soc. Sci. J., 45, 168.

Anthesis (2024). Social Impacts in the Informal Economy | Anthesis Group. Anthesis. https://www.anthesisgroup.com/insights/social-impacts-in-the-informal-economy/

Berdiev, A. N., Gomes, B., & Saunoris, J. W. (2023). Revisiting the nexus between globalisation and the shadow economy: Untying the influences of de jure versus de facto globalisation. T*he World Economy*, 46(1), 27-54.

Buehn, A., & Schneider, F. (2012). Shadow economies around the world: novel insights empirical results. *International Tax and Public Finance*, 19(1), 139-171.

Fajnzylber, P., Lederman, D., & Loayza, N. (2002). What causes violent crime? *European Economic Review*, 46(7), 1323-1357.

Feige, E. L. (1990). Defining and estimating underground and informal economies: The new institutional economics approach. World development, 18(7), 989-1002.

Friedman, E., Johnson, S., Kaufmann, D., & Zoido-Lobaton, P. (2000). Dodging the grabbing hand: the determinants of unofficial activity in 69 countries. *Journal of public economics*, 76(3), 459-493.

Gerxhani, K., & Cichocki, S. (2023). Formal and informal institutions: understanding the shadow economy in transition countries. *Journal of Institutional Economics*, 19(5), 656-672.

Giedraitis, V. R., Stavytskyy, A., Kharlamova, G., & Ulvidiene, E. (2023). Bring on the Light: Reduction of the Corporate Shadow Economy by Tax Reform. Access to Just. E. Eur., 165.

Gnangnon, S. K. (2023). Effect of the shadow economy on tax reform in developing countries. Economies, 11(3), 96.

Guven, M., Jain, H., & Joubert, C. (2021). Social protection for the informal economy: Operational lessons for developing countries in Africa and beyond. *Journal of political economy*, *66*(4), 303-328.

Kannangara, K.K.C.S. & Wu, Y. (2023). Shadow Economy in Sri Lanka: A Review and New Estimates, *Economics Discussion / Working Papers 23-04*, The University of Western Australia, Department of Economics.

Kelmanson, M. B., Kirabaeva, K., Medina, L., Mircheva, M., & Weiss, J. (2019). Explaining the shadow economy in Europe: size, causes and policy options. International Monetary Fund. IMF Working Papers, 1-29.

Kenton, W. & Mansa, J. (2022). Underground Economy: Definition, Statistics, Trends, and Examples. [Online] Available at: https://www.investopedia.com/terms/ u/underground-economy.asp.

Lukito, H., & Adi, A. F. N. (2023). Shadow Economy and its Impact on Tax Revenues in Mojokerto City. Profit: *Journal Administration Business*, 17(2), 214-230.

Mara, E. R., Achim, M. V., & Clement, S. (2023). A Bidirectional Causality Between Shadow Economy and Economic and Sustainable Development. In Sustainable Finance and Financial Crime. *Cham: Springer International Publishing*, 247-266.

Mathias, E., & Wardzynski, A. (2023). Leveraging Anti-money Laundering Measures to Improve Tax Compliance and Help Mobilize Domestic Revenues.

Medina, L. (2018). Shadow Economies Around the World What Did We Learn Over the Last 20 Years?

Neck, R., Wachter, J. U., & Schneider, F. (2012). Tax avoidance versus tax evasion: on some determinants of the shadow economy. *International Tax and Public Finance*, 19, 104-117.

Nemec, D., Kotlanova, E., Kotlan, I., & Machova, Z. (2021). Corruption, taxation and the impact on the shadow economy. Economies, 9(1), 18.

OECD (2009). Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth. OECD, pp. 1-37.

OECD (2017). Shining Light on the Shadow Economy: Opportunities and Threats. OECD, pp. 1-60.

Peabody, J. W., Taguiwalo, M. M., Robalino, D. A., & Frenk, J. (2006). Improving the quality of care in developing countries. Disease Control Priorities in Developing Countries. 2nd edition.

Polese, A., Tokyzhanova, T., Moise, G., Aguzzi, T., Kerikmäe, T., Sagynbaeva, A., & Kussaiynkyzy, A. (2023). Why Shadow Economy and Informality Should Be Separated As Concepts: Results And Implications of The Shadow Economy Survey In The Post-Soviet Region, *Romanian Political Science Review*, 23(1).

Romero, G. Q., Alexander, T. F. & Ribarsky, J. (2021). Measuring the Informal Economy. Measuring the Informal Economy, 2,1-38.

Samaranayake, D. I. J. & Dayarathna-Banda, O. G. (2015). Unemployment, official economy and the dimension of the shadow economy: an empirical analysis for Sri Lanka using SEM approach. *Sri Lanka Journal of Economic Research*, 3(1), 113-153.

Samaranayake, D. I. J. (2016). *Necessary Evils.* Available at SSRN: https://ssrn.com/abstract=4892622 or http://dx.doi.org/10.2139/ssrn.4892622

Samaranayake, D. I. J. (2017). Reflects the Hidden: Measuring Sri Lankan Shadow Economy. *Asian Economic and Financial Review*, 7(7), 656-676.

Schneider, F. (2012). The Shadow Economy and Work in the Shadow: What Do We (Not) Know?. IZA, 1-73.

Schneider, F., & Buehn, A. (2017). Estimating a shadow economy: Results, methods, problems, and open questions. *Open Economics*, 1(1), 1-29.

Schneider, F., & Enste, D. (2002). Hiding in the Shadows The Growth of the Underground Economy. *Economic Issues*, 30.

Schneider, F., & Enste, D. (2003). Hiding in the shadows: the growth of the underground economy. In Hiding in the Shadows. International Monetary Fund.

Schneider, F., & Enste, D. H. (2000). Shadow economies: size, causes, and consequences. *Journal of Economic Literature*, 38(1), 77-114.

Torgler, B., & Schneider, F. (2007). Shadow economy, tax morale, governance and institutional quality: a panel analysis. Working Paper Series No. 2007-01, Department of Economics, University of St. Gallen.

Torgler, B., Schneider, F., & Schaltegger, C. (2012). Shadow Economy, Tax Morale, Governance and Institutional Quality: A Panel Analysis. *Journal of Economic Psychology*, 33(1), 1-19.

U.S. Department of Justice, (2022). The Role of Law Enforcement in Detecting, Investigating, And Prosecuting Criminal Activity Related to Digital Assets. The Report of the Attorney General Pursuant to Section 5(b)(iii) of Executive Order 14067, 1-66.

United Nation, (2018). What we have learned over the last ten years: A summary of knowledge acquired and produced by the. UN system coordination Task Team on the Implementation

of the UN System Common Position on drug-related matters, 1-52.

Wahua, L., Kwode, I. E., Chukwuma, I. R., & Attipoe, J. K. A. M. (2023). Review of contemporary best practices in tax revenue mobilization from underground economies. *International Journal of Latest Technology in Engineering, Management & Applied Science*, 12(2), 38-48.

Williams, C. (2012). The impact of government interventions on the shadow economy: Evidence from Greece. *International Journal of Social Economics*, 39(3), 171-191.

Williams, C. C. (2023). A modern guide to the informal economy. Edward Elgar Publishing.

Williams, C., Martinez-Perez, A., & Abdi, K. A. (2015). The impact of regulation on informal labor markets: A cross-country analysis. *World Development Perspectives*, 1-2(7), 47-61.

Wiseman, T. (2024). Regulation and the Shadow Economy. The Center for Growth and Opportunity.

Zhanabekov, S. (2022). Robust determinants of the shadow economy. Bulletin Economic Research, 74(4), 1017-1052.

Zibell, L. S., & Madhur, S. (2010). Regulatory Reforms for Improving the Business Environment in Selected Asian Economies—How Monitoring and Comparative Benchmarking Can Provide Incentive for Reform. *ADB Working Paper Series on Regional Economic Integration*, 40, 1-60.

8. Annexure

8.1. Annexure I: Model Fitness (a)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.811a	.658	.649	.464	2.053

a. Predictors: (Constant), Economic Incentives, Enforcement measures, Tax Policies, Regulation

b. Dependent Variable: Economy Size

8.2. Annexure II: Model Fitness (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.146	4	15.036	69.859	.000[b]
	Residual	31.210	145	.215		
	Total	91.356	149			

a. Dependent Variable: Economy Size

b. Predictors: (Constant), Economic Incentives, Enforcement measures, Tax Policies, Regulations

Source: Authors' estimations using SPSS statistical software